

Appl. No. 09/905,566
Amdt. Dated February 18, 2005
Reply to Office Action of October 19, 2004

• • R E M A R K S / A R G U M E N T S • •

The Official Action of October 19, 2004 has been thoroughly studied. Accordingly, the changes presented herein for the application, considered together with the following remarks, are believed to be sufficient to place the application into condition for allowance.

By the present amendment, claims 1 has been changed to recite that only one or more discrete, isolated portions of the channel is subjected to light at a fluence so as to change the surface thereat.

Claim 2 has been changed to recite that a portion of the channel has been exposed to light at a fluence and wavelength(s) which are sufficient to alter the surface charge, but the substrate is not ablated by the light.

Claim 8 has been changed in the manner courteously suggested by the Examiner.

Finally, new claims 25-31 have been added which recited that the substrate if not ablated by the light used to alter the surface charge of the channels.

Entry of the changes to the claims is respectfully requested.

Claims 1-31 are pending in this application.

Claims 11-24 have been withdrawn as being directed to a non-elected invention.

As noted on page 2 of the Official Action the Examiner has indicated that the withdrawn claims 11-18 will be rejoined to elected claims 1-10 if claims 1-10 are found to be allowable.

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Claims 1 and 3-10 stand rejected under 35 U.S.C. §102(b) as being anticipated by Locascio et al, Journal of Chromatography A, 857, 275-285 (1999).

Claim 2 stands objected to as being dependent upon a rejected base claim. The Examiner has indicated that claim 2 would be allowable if rewritten in independent form.

For the reasons set forth below, it is submitted that all of the pending claims are allowable over the prior art or record and therefore, the outstanding prior art rejection of claims 1 and 3-10 should properly be withdrawn.

Favorable reconsideration by the Examiner is respectfully requested.

The Examiner has relied upon Locascio et al. as disclosing:

...a method to modify a microfluid device by altering the surface charge of channel by laser ablation in air (first columns of pages 276 and 282).

and as disclosing

...that the substrate comprises polyacrylic, polystyrene or polyester (column 2 of page 276).

As set forth in the title, Locascio et al. is directed to "Measurement of Electroosmotic Flow in Plastic Imprinted Microfluid Devices and the Effect of Protein Adsorption on Flow Rate."

In Locascio et al. channels were formed by imprinting as discussed in section 2.2 (beginning on page 276) and the electroosmotic flow characteristics of the microchannels were evaluated with and without protein absorption.

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It is important to note that in Locascio et al. the characteristics of the channels were essentially uniform. That is, the entire channel structure was formed by imprinting and thereafter subjected to the flow evaluation.

Locascio et al. does not teach taking any steps to effect, change or alter the surface charge of any discrete, isolated portion of the channels.

More importantly, the channels are tested in Locascio et al. "as is" or "as formed" by imprinting.

There is no teaching or suggesting of altering the surface charge or flow characteristics of any discrete, isolated portion of the channels in Locascio et al.

The Examiner has relied upon Locascio et al. as mentioning "laser ablation" and has stated that Locascio et al. teaches "laser ablation" for altering the surface charge of a channel.

This is an incorrect statement.

Locascio et al. does not teach "laser ablation" for altering the surface charge of a channel. Locascio et al. only teaches laser ablation (together with X-ray photolithography, "soft" lithography, plastic ultraviolet photolithography, hot embossing or imprinting, and injection molding) as a method of forming microchannels.

There is no teaching in Locascio et al. of laser ablation (or any other technique or process) to alter the surface charge of a channel after the channel has been formed.

Moreover there is no teaching in Locascio et al. of laser ablation (or any other technique or process) to alter the surface charge of any only discrete or isolated portions of a channel.

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Moreover, there is no teaching in Locascio et al. of the use of a laser that does not involve ablation.

It is important to recognize that the differences between what Locascio et al. teaches and what the present invention provides.

Locascio et al. merely involves the measurement of flow characteristics of microchannels after they are formed.

Applicants' invention involves a process by which the electroosmotic mobility in selected regions of existing microchannels can be modified as desired so that the mobility in the selected regions of those channels is different than the mobility in other regions of the same channels. This technique allows for structures, functions and capabilities - like fixing the racetrack effect which is discussed in detail on applicant's specification, or generating pressure gradients for field-free fluid pumping, or immobilizing molecules at selected portions of a channel, or creating hydrophobic/hydrophilic boundaries for passive valves or for other fluid confinement- which are not at all possible under the teachings of Locascio et al

The teachings of Locascio et al. do not appreciate these features of applicants' claimed invention nor otherwise render these features anticipated or obvious.

Based upon the above distinctions between the prior art relied upon by the Examiner and the present invention, and the overall teachings of prior art, properly considered as a whole, it is respectfully submitted that the Examiner cannot rely upon the prior art as required under 35 U.S.C. §102 as anticipating applicants' claimed invention.

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It is, therefore, submitted that any reliance upon prior art would be improper inasmuch as the prior art does not remotely anticipate, teach, suggest or render obvious the present invention.

It is submitted that the claims, as now amended, and the discussion contained herein clearly show that the claimed invention is novel and neither anticipated nor obvious over the teachings of the prior art and the outstanding rejection of the claims should hence be withdrawn.

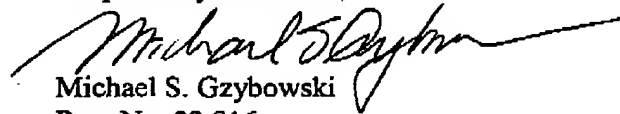
Therefore, reconsideration and withdrawal of the outstanding rejection of the claims and an early allowance of the claims is believed to be in order.

It is believed that the above represents a complete response to the Official Action and reconsideration is requested.

If upon consideration of the above, the Examiner should feel that there remains outstanding issues in the present application that could be resolved, the Examiner is invited to contact applicants' patent counsel at the telephone number given below to discuss such issues.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 12-2136 and please credit any excess fees to such deposit account.

Respectfully submitted,


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